

UNITED STATES PATENT APPLICATION

OF

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FOR

**WASHING MACHINE AND
CABINET THEREOF**

[0001] This application claims the benefit of Korean Application(s) No. 10-2002-0075312 filed on November 29, 2002 which is/are hereby incorporated by reference.

BACKGROUND OF THE INVENTION

5 Field of the Invention

[0002] The present invention relates to a washing machine, and more particularly, to a washing machine and cabinet thereof, which prevents a stress from being concentrated on the cabinet while the washing machine operates.

Discussion of the Related Art

10 [0003] Generally, a washing machine holds water and detergent in a lower part of a tub. After laundry is put in a drum installed inside the tub, the drum is rotated to perform washing, rinsing, and dewatering.

[0004] Such a washing machine is an apparatus for eliminating dirt or filth attached to the laundry by applying a mechanical force thereto together with a detergent.

15 [0005] Specifically, a drum type washing machine is an apparatus for eliminating dirt or filth attached to the laundry by putting the laundry, water, and detergent in a drum horizontally installed to rotate by a driving force of a motor. The drum type washing machine barely has entanglement and damage of the laundry, consumes less water, and even has washing effects of beating and rubbing.

20 [0006] Referring to FIG. 1 and FIG. 2, a general drum type washing machine consists of a cabinet 10 having a front panel, in which an opening is provided to put in/out a laundry, to form an exterior, a door 12 installed on a front side of the cabinet 10 to open/close the opening, a tub 20 provided inside the cabinet 10, and a drum 30 rotatably installed inside the tub 20 to hold the laundry.

[0007] The drum 30 includes lifters 31 on its inside to pull the laundry up to a predetermined height. Once the drum 30 rotates, the laundry is lifted up to an upper part of the drum 30 by the lifters 31 and then falls down for washing.

[0008] A rotational means for rotating the drum 30 is provided in a space between an
5 inside of the cabinet and the tub 20.

[0009] The rotational means consists of a motor 40 provided under the tub 20 to be electrically driven, a first rotational shaft 41 extending in a rear direction of the cabinet to have one end connected to the motor 40, a driving pulley 42 provided at the other end of the first rotational shaft 41, a second rotational shaft 43 having one end connected to a rear side of
10 the drum, a driven pulley 44 provided at the other end of the second rotational shaft 43, and a belt 45 connecting the driving and driven pulleys 42 and 44.

[0010] A rotational force of the motor enabling forward and reverse rotations is transferred to the drum 30 via the two rotational shafts, driving pulley, belt, and driven pulley.

[0011] And, a control panel 13 provided as a control means for controlling an
15 operation of the drum type washing machine is installed on an upper front side of the cabinet 10.

[0012] Moreover, a gasket 14 is provided between the opening of the front panel 11 and the tub 20 to buffer shocks generated from forward and reverse vibrations of the drum 30 and to prevent leakage of the water when the drum is rotating with the door closed.

[0013] Referring to FIG. 3, the cabinet 10 consists of a front-open body 15 to hold the
20 drum and tub inside and the front panel 11 coupled with a front side of the body 15 to have the opening at a center through which the laundry is put in/out.

[0014] The front panel 11 consists of top and bottom flanges 11a and 11b firstly bent from top and bottom ends of the front panel 11 in a rear direction and secondly bent upward

and downward, respectively and left and right flanges 11c and 11d firstly bent from both lateral sides in the rear direction and secondly bent in a direction facing each other, respectively.

[0015] An insertion hole 11e having a shape of key slot is formed at each upper part of the left and right flanges 11c and 11d, and a coupling hole 11f is formed at each lower part of the left and right flanges 11c and 11d.

[0016] And, insertion protrusions 15e and coupling protrusions 15f are formed at both front ends of the body to correspond to the insertion holes 11e and the coupling holes 11f, respectively.

[0017] First screw holes 11g and 11h are formed at the top and bottom flanges 11a and 11b, respectively for assembly to the body 15. And, second crew holes 15g and 15h are formed at front sides of the top and bottom ends of the body 15, respectively to correspond to the first screw holes 11g and 11h. Screw bolts B are fitted to the screw holes for assembly.

[0018] However, in the general drum type washing machine having the above-constructed cabinet 10, vibration of the tub 20 generated from a rotation of the drum 30 is transferred to the front panel 11 through the gasket 14, whereby stress is concentrated on corners of the front panel 11 to distort the corresponding corners.

[0019] To overcome such a problem, a new drum type washing machine and cabinet thereof enabling to prevent the stress concentration is needed.

SUMMARY OF THE INVENTION

[0020] Accordingly, the present invention is directed to a washing machine and cabinet thereof that substantially obviates one or more of the problems due to limitations and disadvantages of the related art.

[0021] An object of the present invention, which has been devised to solve the foregoing problem, lies in providing a washing machine and cabinet thereof, which prevents a stress from being concentrated on the cabinet while the washing machine operates.

[0022] Additional features and advantages of the invention will be set forth in the description which follows, and in part will be apparent to those having ordinary skill in the art upon examination of the following or may be learned from a practice of the invention. The objectives and other advantages of the invention will be realized and attained by the subject matter particularly pointed out in the specification and claims hereof as well as in the appended drawings.

[0023] To achieve these objects and other advantages in accordance with the present invention, as embodied and broadly described herein, there is provided a washing machine cabinet includes a body having an open front side, the body including a base plate at a bottom of the body, a pair of side panels on both sides of the base plate, a rear panel in rear of the base plate and the side panels, and a top panel on the side panels and the rear panel, and a front panel in front of the body to have a plurality of notch recesses for preventing stress concentration.

[0024] The notch recesses are formed at an outline part of the front panel.

[0025] The outline part of the front panel includes a top flange bent from a top edge in a rear direction, a pair of side flanges bent from both side edges in the rear direction, and a bottom flange bent from a bottom edge in the rear direction.

[0026] And, the cabinet further includes a top frame bent upward from a rear end of the top flange, a pair of side frames vertically bent inward from rear ends of the side flanges to face each other, respectively, and a bottom frame bent downward from a rear end of the bottom flange.

[0027] In this case, the notch recesses are formed at both ends of the top and bottom flanges in the vicinity of both ends of the top and bottom frames, respectively. Moreover, each shape of the notch recesses is a 'U' type.

[0028] Meanwhile, the notch recesses may be formed at one sides of portions where the front panel is assembled to the body.

[0029] In another aspect of the present invention, there is provided a washing machine includes a washing tub having an inner tub rotatably installed to hold a laundry for washing and an outer tub holding the inner tub, a drive means for rotating the inner tub, a body holding the washing tub and the drive means inside, the body including a base plate at a bottom of the body, a pair of side panels on both sides of the base plate, a rear panel in rear of the base plate and the side panels, and a top panel on the side panels and the rear panel, and a front panel in front of the body to have a plurality of notch recesses for preventing stress concentration.

[0030] Therefore, the above-constructed drum type washing machine according to the present invention enables to prevent the cabinet from being deformed by long-term use or shocks.

[0031] It is to be understood that both the foregoing explanation and the following detailed description of the present invention are exemplary and illustrative and are intended to provide further explanation of the invention as claimed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0032] The accompanying drawings, which are included to provide a further understanding of the invention and are incorporated in and constitute a part of this application, illustrate embodiment(s) of the invention and together with the description serve to explain

the principle of the invention. In the drawings:

[0033] FIG. 1 is a perspective view of a general drum type washing machine;

[0034] FIG. 2 is a schematic internal view of a general drum type washing machine;

[0035] FIG. 3 is a perspective view of a disassembly of a front panel of a general
5 drum type washing machine; an

[0036] FIG. 4 is a perspective view of a disassembly of a front panel of a cabinet of a
drum type washing machine according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT(S)

10 [0037] Reference will now be made in detail to the preferred embodiment(s) of the
present invention, examples of which are illustrated in the accompanying drawings.
Throughout the drawings, like elements are indicated using the same or similar reference
designations where possible.

[0038] FIG. 4 is a perspective view of a disassembly of a front panel of a cabinet of a
15 drum type washing machine according to the present invention.

[0039] Referring to FIG. 4, a drum type washing machine according to one preferred
embodiment of the present invention includes a cabinet 100 forming an exterior, a tub 200
provided in the cabinet, a drum 300 rotatably provided in the tub 200, and a rotation means
for rotating the drum.

20 [0040] The drum 300 holds a laundry, and a plurality of lifters 310 are installed to
leave a predetermined interval from each other on an inside of the drum 300 in a
circumferential direction to pull up the laundry to a predetermined height.

[0041] The tub 200 and the drum 200 may be called an outer tub and an inner tub,
respectively.

[0042] The cabinet 100 consists of a front-open body 150 holding the drum and tub inside and a front panel 110 coupled with a front side of the body 150.

[0043] The body 150 includes a base plate (not shown in the drawing), a pair of side panels 151, a rear panel (not shown in the drawing), and a top panel 152 provided on the side
5 and rear panels.

[0044] In this case, the front panel 110 has an opening at a center through which the laundry is put in/out, and a door 120 is installed at the front panel 110 to open/close the opening and to prevent the laundry from being thrown away through the opening.

[0045] A control panel 130 controlling an operation of the drum type washing
10 machine is installed on an upper front side of the front panel 110.

[0046] A gasket 140 is installed between the opening of the front panel 110 and the tub 200 to alleviate a shock generated from the tub 200 and to play a role of a packing for preventing water from leaking outside.

[0047] Meanwhile, the front panel 110 has an outline part consisting of a top flange
15 111 bent from a top edge in a rear direction, a pair of side flanges 112 bent from both side edges in the rear direction, and a bottom flange 113 bent from a bottom edge in the rear direction.

[0048] And, the cabinet 100 further includes a top frame 114 bent upward from a rear
20 end of the top flange 111, a pair of side frames 115 vertically bent inward from rear ends of the side flanges 112 to face each other, respectively, and a bottom frame 116 bent downward from a rear end of the bottom flange 113.

[0049] An insertion hole 115a having a key slot shape is formed at each upper part of the respective side frames 115, and a coupling hole 115b is formed at each lower part of the respective side frames 115.

[0050] And, insertion protrusions 153 and coupling protrusions 154 are formed at both front ends of the body 150 to correspond to the insertion holes 115a and the coupling holes 115b, respectively.

[0051] First screw holes 114a and 116a are formed at the top and bottom frames 114 and 116, respectively for assembly to the body 150. And, second crew holes 155 and 156 are formed at front sides of the top and bottom ends of the body 150, respectively to correspond to the first screw holes 114a and 116a. Screw bolts B are fitted to the screw holes for assembly.

[0052] Meanwhile, notch recesses 111a and 113a are formed at the outline part of the front panel 110 to prevent the stress concentration from being generated by the vibration of the tub 200 transferred through the gasket 140.

[0053] The notch recesses 111a and 113a are formed on corners of the outline part of the front panel 110.

[0054] Specifically, the notch recesses 111a and 113a are formed at both ends of the top and bottom flanges 111 and 113 in the vicinity of both ends of the top and bottom frames 114 and 116, respectively. And, each shape of the notch recesses 111a and 113a is preferably a 'U' type.

[0055] Instead, the notch recesses 111a and 113a may be formed at one sides of portions where the front panel 110 is assembled to the body 150 or both corners of the side flanges 112.

[0056] A process of assembling the front panel 110 to the body 150 of the above-constructed drum type washing machine according to the present invention is explained as follows.

[0057] First of all, after the insertion protrusions 153 are fitted to the insertion holes 115a at the side flanges 112 of the front panel 110, the front panel 110 is lifted upward to have

the coupling protrusions 154 be correspondingly inserted in the coupling holes 115.

[0058] Subsequently, the screw bolts B are fitted to the screw holes at the front panel 110 and the body 150 to assemble the cabinet 100.

[0059] The above-assembled cabinet receives the vibration of the tub 200 generated
5 from the rotation of the drum 300.

[0060] The stress generated from the transferred vibration is dispersed by the notch recesses 111a and 113a at the corners of the cabinet to prevent the deformation or damage of the cabinet.

[0061] Accordingly, the above-constructed present invention has the following effects
10 or advantages.

[0062] First of all, the present invention prevents the stress, which is generated from the transferred vibration on operating the washing machine, from being concentrated on the cabinet, and more specifically, on the front panel, thereby enabling to prevent the deformation or damage of the cabinet.

[0063] Secondly, a rigidity of the front panel is improved to form a thinner front panel,
15 whereby a product cost is saved.

[0064] It will be apparent to those skilled in the art that various modifications and variations can be made in the present invention without departing from the spirit or scope of the invention. Thus, it is intended that the present invention cover such modifications and
20 variations, provided they come within the scope of the appended claims and their equivalents.